

Course Title: **Computer Programming2**  
Date: 12.04.2016 (Mid-Term)Course Code: CCE1204 1<sup>st</sup> year  
Allowed time: 1 hour**Answer the following questions:****Question 1:****(6 marks)**

1. Construct a class called **Circle** with its attributes: **Name** and **Radius** and three methods: **Constructor**, **Set**, and **Get**. **Write a complete C++ program and draw the UML diagram** to test the Circle class which must contains the following two member functions to calculate the area of a circle:
  - a. **C\_Area1** function that must receive the **radius** from the user.
  - b. **C\_Area2** function that has **a default value** for the radius (for example: 10).**Print the area of the Circle in both cases.**

**Question 2: State which of the following are true and which are false: (5 marks)**

- 1) When using nested structure you must define the inside structure first ( ).
- 2) Private access specifier can only be called by or accessed by functions that are members of the class ( ).
- 3) Union is not similar to a struct, and all members share a single memory location in both of them ( ).
- 4) We can compare two struct variables directly like this: if (s1 >= s2) ( ).
- 5) The user must write an initialization list for the structure ( ).

**Question 3:****(4 marks)**

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Create a structure data type called **Book**. The structure has four members: Title, Author, Date, and Price? The **date** is represented as a structure of day, month, and year. While, the **price** is represented as **a union** of dollars or yen. **Write a suitable C++ program to test your structure.**

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Allowed time: 1 hour**Question 1:****(6 marks)**

Construct a class called **Circle** with its attributes: **Name** and **Radius** and three methods: **Constructor**, **Set**, and **Get**. Write a complete C++ program and draw the UML diagram to test the Circle class which must contains the following two member functions to calculate the area of a circle:

- c. **C\_Area1** function that must receive the **radius** from the user.
- d. **C\_Area2** function that has a **default value** for the radius (for example: 10).

**Print the area of the Circle in both cases.**

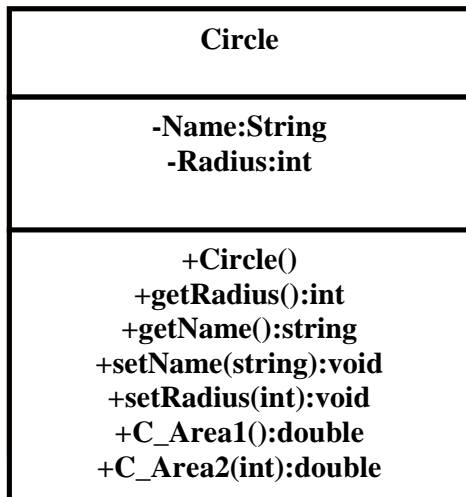
**Ans.**

```
#include<iostream>
# include<string>
using namespace std;
class Circle
{
    private:
        string name;
        int radius;
    public:
        Circle()          // Constructor
        {
            name=" ";
            radius=0;
        }
        void setRadius(int r){
            radius=r;
        }
        int getRadius(){
            return radius;
        }
        void setName(string n){
            name=n;
        }
        string getName(){
            return name;
        }
}
double C_Area1(){
return (3.14*radius*radius);
}
double C_Area2(int r){
return (3.14*radius*radius);
}
};
```

```

void main(){
Circle c1,c2;
int r;
cout<<"enter radius of the circle";
cin>>r;
c1.setRadius(r);
cout<<"Area of the circle from function1"<<c1.
C_Area1()<<endl;
cout<<"Area of the circle from function2"<<c2.
C_Area2(10);
}

```



**Question 2:State which of the following are true and which are false: (5 marks)**

1. When using nested structure you must define the inside structure first ( **T** ).
2. Private access specifier can only be called by or accessed by functions that are members of the class ( **T** ).
3. Union is not similar to a struct, and all members share a single memory location in both of them ( **F** ).
4. We can compare two struct variables directly like this: if (s1>= s2) ( **F** ).
5. The user must write an initialization list for the structure ( **F** ).

**Question 3:**

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Create a structure data type called **Book**. The structure has four members: Title, Author, Date, and Price? The **date** is represented as a structure of day, month, and year. While, the **price** is represented as a **union** of dollars or yen. **Write a suitable C++ program to test your structure.**

**Ans.**

```
#include<iostream>
using namespace std;
struct Date{
    int day;
    int month;
    int year;
};
struct Book {
    char title[20];
    char author[20];
    Date date;
    union {
        float dollars;
        int yen;
    }price;
};
void main(){
    Book b;
    cout<<"enter the author of a book";
    cin>>b.author;
    cout<<"enter the title of a book";
    cin>>b.title;
    cout<<"enter the date of a book";
    cin>>b.date.day>>b.date.month>>b.date.year;
    cout<<"enter the price of a book in dollars";
    cin>>b.price.dollars;
    cout<<"enter the price of a book in yen";
    cin>>b.price.yen;
    cout<<"information of book("<<"author is
    "<<b.author<<","title is"<<b.title<<","date
    is"<<b.date.day<<"/"<<b.date.month<<"/"<<b.date.year<<
    price in dollars="<<b.price.dollars<<"$"<<","<<"price
    in yen="<<b.price.yen<<"y"<<")";
}
```